REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested.

Claims 10-18 were pending in this application. Claims 10 and 11 are amended herein, claim 18 is cancelled herein. Thus, claims 10-17 are pending in this application. No new matter has been added.

Claims 10 and 15-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Terada et al. (U.S. Patent No. 5,854,427) (hereinafter referred to as "Terada") in view of Watanabe (U.S. Patent No, 7, 068, 744) (hereinafter referred to as "Watanabe"). Claims 11-14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Terada in view of Watanabe and further in view of Nozoe et al. (U.S. Patent No. 6,959,584) (hereinafter referred to as "Nozoe").

Independent claim 10 has been amended to distinguish over the references cited by the Examiner.

Claim 10 recites an angular velocity sensor that includes, in part, a correction circuit portion operable to remove a noise signal component, caused by a mass balance of a transducer, of a sense signal detected erroneously, as if an angular velocity is occurring in the transducer due to the mass balance of the transducer when no angular velocity is occurring in the transducer, from a signal component of the sense signal. Moreover, claim 10 recites that the correction circuit portion is operable to generate a correction signal by attenuating a monitor signal and constantly remove the noise signal component from the sense signal by superimposing the generated correction signal on the sense signal.

As admitted by the Examiner in the Office Action, Terada does not disclose a "control portion including a reducing means that removes, as a noise component(s), unwanted signal components of the sense signal." The Examiner cited Watanabe as teaching this feature, and specifically asserted that Watanabe discloses "a synchronous detection method and device, and sensor signal detector comprising sensing or detection electrodes 22, 24 that output detection signals SP, SM of which are processed by a detector circuit 4, a differential amplifier 34 and a synchronous detection unit 36 to obtain a detection signal SS1 whose noise components are removed by means 40, 60."

In contrast to the present invention, Watanabe does not disclose removing a noise signal component, caused by a mass balance of the transducer, of a sense signal, and a correction circuit portion that is operable to generate a correction signal by attenuating a monitor signal and constantly remove the noise signal component from the sense signal by superimposing the generated correction signal on the sense signal.

Instead, Watanabe discloses efficiently minimizing high-frequency noise stemming from synchronous detection without the necessity of a low-pass filter that requires a large time constant (see Abstract, lines 1-4 and col. 1, lines 41-45).

Specifically, Watanabe discloses a sensing element 2 that is a vibrator, and a detector circuit 4 that drives the sensing element 2 and detects an angular velocity at which the angular displacement of the vibrator 2 has changed due to an external factor. During operation, sense signals SP and SM are produced that are proportional to variations of electrostatic capacitances and are 180° out of phase with each other. An amplified difference between signals SP and SM (i.e., sense signal SS0) is sent to a detection unit 36 which performs full-wave rectification on signal SS0 synchronously with a reference signal CKD.

Watanabe describes a reference signal generator 38 that produces the reference signal CKD using a monitor signal MS sent from an amplifier 32. However, Watanabe does not describe producing the signal CKD by attenuating the monitor signal MS.

Watanabe also describes unit 36 outputting a signal SS1 to an analog moving-average filter 40 that averages samples of signal SS1 acquired during one cycle of the reference signal CKD. Filter 40 produces a signal SS2 that is transferred to a low-pass filter 42 which filters the signal SS2 so as to remove high frequency noises (see col. 10, lines 3-50). Additionally, Watanabe discloses a digital moving-average filter 80 that removes a noise component which has not been removed by a time-domain A/D converter 60 (see col. 16, lines 31-35). Thus, Watanabe describes removing noise from the signal SS2 using the filter 40, and removing noise using an A/D converter 60 and filter 80, not by superimposing the signal CKD on the signal SS2.

Moreover, there is no disclosure or suggestion to modify Watanabe such that it removes a noise component caused by a mass balance of the sensing element 2, generates a correction signal by attenuating the monitor signal MS, and superimposes the reference signal CKD on the signal SS2 to remove high frequency noises from the signal SS2.

In other words, Watanabe does not disclose *a correction circuit portion operable to remove a noise signal component, caused by a mass balance of the transducer, of a sense signal detected erroneously, as if an angular velocity is occurring in the transducer due to a mass balance of the transducer when no angular velocity is occurring in the transducer, from a signal component of the sense signal*, as recited in claim 10. Moreover, Watanabe does not disclose *a correction circuit portion that is operable to generate a correction signal by attenuating a monitor signal and constantly remove the noise signal component from the sense signal by superimposing the generated correction signal on the sense signal,* as recited in claim 10.

For at least the reasons discussed above, it is believed clear that Watanabe fails to disclose or suggest the present invention as recited in claim 10.

Regarding the combination of Terada, Watanabe and Nozoe, Nozoe is relied upon in the rejection as disclosing "a memory portion that includes a data input terminal which changes from a conducting state to a non-conducting state, generating a correction signal based on the memory portion and the monitor signal and the correction portion including a ladder resistor and a switch portion that adjusts a resistance value of the ladder resistor according to the data stored in the memory."

Nozoe discloses preventing an offset voltage variation due to varying characteristics of a sensor over time by introducing a test period for forcibly stopping the vibration of a sensor element 40, to which quasi-driving voltages b and c are supplied from a signal generator 62. However, it is clear that Nozoe also fails to disclose or suggest the above-discussed feature as recited in claim 10.

For at least the reasons set forth above, it is respectfully submitted that the above-discussed features as recited in claim 10 are not disclosed in the references applied by the Examiner. Furthermore, it is respectfully submitted that one of ordinary skill in the art at the time the invention was made would not have modified Terada in such a manner as to result in, or otherwise render obvious, the invention of claim 10. Therefore, it is respectfully submitted that claim 10, and claims 11-17 depending therefrom, are clearly allowable.

Moreover, dependent claim 11 is allowable on its own merits. Specifically, in addition to the features of independent claim 10, claim 11 requires a memory portion for storing in advance data to remove the noise signal component from the signal component of the sense

signal, wherein the correction circuit portion is further operable to generate a correction signal by attenuating the monitor signal, based on the data stored in the memory portion.

The Examiner has also admitted in the Office Action that Terada and Watanabe do not disclose this feature, and relied upon Nozoe as disclosing this feature (as discussed above). Specifically, the Examiner asserted that Nozoe discloses "an angular velocity sensor comprising a ladder network resistor that is used as an adjuster 36a that adjusts a signal level by sending digital data to the resistor and optimum data that are stored in a memory (See Col. 17, lines 3-21), the memory portion including a data input terminals 24, 25 and switches 55, 56 that select the polarity of a driving signal supplied to the adjustor (See Col. 15, Lines 17-21)."

In contrast to the invention recited in claim 11, Nozoe additionally discloses performing an adjustment by successively sending digital data to a ladder network resistor and finding the optimum digital data that gives zero differential voltage at a terminal 64 induced by current signals d and e. The obtained optimum digital data is stored in a memory such as ROM. Thus, the data stored in Nozoe is not data for removing a noise signal component from a signal component of a sense signal, as recited in claim 11. Moreover, there is no disclosure or suggestion to modify Nozoe such that the data is for removing a noise component from a signal.

In other words, Nozoe does not disclose *a memory portion for storing in advance data to remove the noise signal component from the signal component of the sense signal, wherein the correction circuit portion is further operable to generate a correction signal by attenuating the monitor signal, based on the data stored in the memory portion.*

Thus, for at least the reasons set forth above, it is believed clear that Nozoe fails to disclose or suggest the present invention as recited in claim 11.

In the May 28, 2008 Office Action, the Examiner did not specifically address the Applicants' arguments regarding claims 15 and 16 that were included in the response filed on February 14, 2008. Consequently, the Applicants have provided the same arguments below and respectfully request the Examiner to address these arguments in the next Office Action if the rejection is repeated.

Dependent claims 15 and 16 are allowable on their own merits. Specifically, in addition to the features of independent claim 10, claim 15 requires a noise signal component to include a first noise signal component generated in a state where a phase of a sense signal is not shifted

with respect to a phase of a monitor signal, and claim 16 requires the noise signal component to include a second noise signal component except for the first noise component generated due to a phase shift between the monitor signal and the sense signal. Notably, Terada discloses noise components which appear due to unwanted vibration while a tuning fork is at work. Thus, for at least the reasons set forth above, it is believed clear that Terada and Watanabe fail to disclose or suggest the present invention as recited in claims 15 and 16.

In view of the foregoing amendments and remarks, all of the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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